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SYNOPSIS OF THE NORTH AMERICAN HYPOCREACEÆ, WITH DESCRIPTIONS OF THE SPECIES.*

BY J. B. ELLIS AND B. M. EVERHART.

FAMILY HYPOCREACEÆ, DE NOTARIS.

Simple, or compound. Perithecia subcarnose, or ceraceo-membranaceous, never carbonaceous, bright colored, opening by a subcentral ostium. Stroma, when present, soft, waxy-carrose, or occasionally cottony. Sacc. Syll., II, p. 447.

SUB-FAMILY I, HYPOCREOIDEÆ.

GEN. I, CLAVICEPS, TUL.

1. CLAVICEPS PURPUREA (Fr.), Tul. Ann. Sci. Nat., 1853, XX, Tab. 3.

The ascigerous form of this species, which grows from the Sclerotium (ergot), often found in heads of rye, and in various other species of the order *Gramineæ*, has not, so far as we are aware, been met with in this country, though its *Sclerotium*, or condensed mycelium (*Sclerotium clavus*, D. C.), is very common.

This species is characterized as follows: Heads sphaeroid, tuberculose from the prominent perithecia, borne on short flexuous stems; asci narrow, linear, 8-spored; sporidia filiform, continuous, attenuated toward each end, hyaline, 50—76 μ long. *Fusarium heterosporum*, Nees. and *Oidium abortifaciens*, B. and Br. are considered to be the conidia of this species.

2. CLAVICEPS MICROCEPHALA (Wallr.), which differs from *C. purpurea*, principally, in its smaller size (stem filiform, 10—16 millim. long, head globose, rufous, .05 millim.), grows from the ergot of *Phragmites communis*, which, however, also produces the first-mentioned species. Both these may be raised by cultivation of their sclerotia, which may be lightly covered with earth, kept properly moistened in a flower pot.

GEN. II, CORDYCEPS, FRIES.—Stroma vertical, entomogenous, or occasionally mycogenous, clavate. Sporidia filiform, hyaline, separating into joints.

A. ENTOMOGENÆ.

X. *Stroma simple, head rounded, or elliptical.*

3. CORDYCEPS ENTOMORRHIZA (Dicks.)

Carnose; head subglobose, fuscous; stipe slender, simple or double, subcompressed, 2 inches long, and over; asci cylindrical; sporidia filiform, hyaline, breaking up into cylindrical joints, or sections, 7—8 μ long.

Growing from larvæ of insects. Carolina (Ravenel)

* The arrangement here adopted is that of Cooke, in Grevillea, Vol. XII, p. 102.

4. *CORDYCEPS ARMENIACA*, B. & C. Journ. Linn., Soc., 1, p. 159. Tab. 1, fig. 1.

Apricot-colored, stipe flexuous, rather short, 8 millim. long; head subglobose, rather pale, roughened by the perithecia; asci elongated, subinflated at the apex; sporidia linear (?), immature.

On dung of birds, probably from the remains of insects eaten. Carolina (Ravenel).

XX. *Stroma furcate, or ramose.*

5. *CORDYCEPS PALUSTRIS*, Berk. & Br. Linn. Journ., 1, c., fig. 5.

Carnose-suberose, dark, dirty flesh-colored, stipe cylindrical, bifid, or trifid above, 25—50 millim. long, including the clavate subcylindrical head, which is roughened by the projecting ostiola; sporidia filiform, separating into small ($1\frac{1}{2} \mu$) globose joints. On dead larvæ in damp ground. Carolina (Ravenel).

XXX. *Stroma simple, head elongated.*

6. *CORDYCEPS STYLOPHORA*, Berk. & Br. Linn. Journ., 1, c., fig. 3.

Yellow; stipe slender, 12—18 millim. long, $\frac{1}{2}$ millim. thick; head much elongated, with the surface nearly smooth; perithecia immersed. On dead larvæ. Carolina (Ravenel).

The specimen in Ravenel's Fungi, Car. Exsicc., V, No. 49, has the slender stem a little over 2 cm. long, the ascigerous part occupying a medial position, cylindrical, and slightly enlarged, about 8 millim. long by 1 millim. thick, with a sterile, slender beak, about $\frac{1}{2}$ cm. long, being a prolongation of the stipe, but the specimen is apparently immature, being without asci or sporidia.

7. *CORDYCEPS CLAVULATA*, Schw. Syn., N. Am., 1155. On dead scale insects (Lecanium), on living branches of *Fraxinus* and *Prinus*, N. Y. (Peck). On branches of *Clethra*, Newfield, N. J.

From specimens collected by Prof. Peck, and distributed in de Thuemen's Mycotheca Universalis, No. 1258, we have drawn the following description: Stroma simple, clavate, about $3 \times \frac{1}{4}$ millim., consisting of a slight cinereous stipe, surmounted by a black ovate, or elliptical head, about 1 millim. high and $\frac{1}{2}$ millim. thick, roughened by the rounded prominent perithecia, which are of course cellular structure, and only imperfectly perforated above; asci sessile, broadest in the middle, contracted above, and rounded at the apex, $80-95 \times 8-10 \mu$; sporidia filiform, multiseptate, $40-70 \times 1\frac{1}{2}-2 \mu$, joints 3—5 μ long.

In Sacc. Sylloge, II, p. 568, the species represented by the above specimens is made a synonym of *C. pistillariaeformis*, B. & Br., but if the two species are the same, the name of Schweinitz has priority, and it is quite certain that the specimens in M. U., 1258, are the genuine *C. clavulata* Schw.

8. *CORDYCEPS MILITARIS* (Linn.)

Growing from dead pupæ of moths buried just below the surface of the ground. Massachusetts (Farlow), Carolina (Ravenel), Pennsylvania (Everhart), New York (Peck), New Jersey (Ellis), California (Harkness), Wisconsin (Trelease) conidia.

Stromata solitary, or sometimes several, issuing usually from the head, but sometimes from the articulations of the pupa, orange-colored, 4—5 cm. high, including the elongated-clavate head, which is 1—1½ cm. long, and minutely tuberculose from the subconic, emergent, orange-red perithecia. Asci slender, 115—150 x 4—5 μ , containing eight slender filiform closely-jointed sporidia, nearly as long as the asci, and breaking up into minute ($\frac{1}{2}$ — $\frac{3}{4}$ μ), hyaline, subelliptical segments. The conidial stage (*Isaria farinosa*, Fr.), is often met with, and resembles a small white plume of about the same height as the ascigerous stroma, and more or less branched above.

9. *CORDYCEPS RAVENELII*, B. & C. Journ. Linn. Soc. I, p. 159, tab. 1, fig. 4. Growing from dead larvæ of the "June-beetle" (*Lachnosteria fusca*) and other larvæ (?), buried in the ground. Carolina (Ravenel), Iowa (Bessey), Pennsylvania (Everhart).

Stroma (stipe) elongated, flexuous, compressed and sulcate when dry, at first minutely tomentose, finally nearly glabrous, 5 inches or more high (see Riley, in American Entomologist, 1880), including the elongated-cylindrical head, which is roughened by the superficial, black, subhemispherical, large (175—200 μ) perithecia. Asci linear-cylindrical, 150—200 x 7—9 μ , slightly narrowed above and rounded at the apex, containing 8, filiform sporidia, nearly as long as the asci, about 2 μ thick, and breaking up into joints 3—5 μ long. The specimens in Rav., Fungi Car. Exsicc. IV, No. 28, are from 8—10 cm. high, the yellowish-brown stem about 2 millim. thick, enlarged above, in that part occupied by the perithecia, to about 3 μ thick; but the specimens are, no doubt, considerably smaller than when fresh.

Descriptions and good drawings of this and the two preceding species are given in Journ. N. Y. Microscop., Soc., Vol. I, p. 91 et seq., by Rev. J. L. Zabriskie.

10. *CORDYCEPS ACICULARIS*, Rav. Linn. Journ., l. c., fig. 2.) *C. Caroliniensis*, B. & Rav., in Rav. Fungi, Car. Exsicc. IV, No. 29).

Fuscous; stipe slender, elongated; head cylindrical, with a long acuminate sterile apex; perithecia superficial, free; asci very long, flexuous; sporidia linear, breaking up into truncate segments about 5 μ long. On larvæ buried a little distance below the surface of the ground. Carolina (Ravenel).

We have copied the above description from Saccardo's Sylloge II, p. 574.

The specimens in Rav. Exsicc. have a filiform flexuous stem, yellowish-brown below, cinereous and attenuated above, 8—10 cm. high, and (in our copy) entirely sterile.

11. *CORDYCEPS SUPERFICIALIS*, Pk. 28th Rep. N. Y. State Mus., p. 70. Under hemlock trees on buried larvæ. Northville, N. Y. August. (Peck.)

"Slender, about 1 inch high, smooth, brown, the sterile apex gradually tapering to a point; perithecia crowded, superficial, subglobose, blackish-brown, sometimes collapsed, with a small, papilliform ostiolum; asci cylindrical; spores long, slender, filiform. Related to and intermediate between *C. Ravenelii*, and *C. acicularis*. The stem of the plant is about equal in length to the club, or perithecia-bearing part. The perithecia are more loosely placed at the extremities of the club, thereby giving it a subfusiform shape. The spores are more slender than those of *C. acicularis*, but the plant itself is less elongated and slender." We have seen no specimens, and copy the above from the report cited.

XXXX. *Perithecia scattered on the stroma, scarcely capitate.*

12. *CORDYCEPS SPHINGUM*, Tul. Sel. Carp., III, p. 12.

Growing from dead moths, of the genus *Sphinx*. Massachusetts (Farlow, in "List of Fungi found in the vicinity of Boston." Bull. Bussey Inst.)

Stromata arising from a thin pale ochraceous crust, overspreading the matrix, very slender and rather rigid, scattered, 50 millim. long; springing mostly from the abdominal rings; perithecia seated on the crust itself, or on the lower or medial parts of the slender stromata, subsuperficial, sparingly cæspitose, or collected into a tolerably dense spike (*densius in spicam digestis*), narrow, ovate, $\frac{1}{2}$ millim. long, glabrous, carnose, pale reddish; asci very long, cylindrical, 4 μ thick; sporidia very narrow filiform. The conidial stage is *Isaria Sphingum*, Schw.

(To be continued.)

SKETCH OF DE SCHWEINITZ.*

BY W. A. KELLERMAN.

Lewis David von Schweinitz was born at Bethlehem, Pa., Feb 13th, 1780. His father is said to have belonged to an ancient and distinguished family of Silesia, Germany. He was superintendent of the "fiscal and secular concerns" of the Moravian Brethren of North America. Schweinitz was doubtless much influenced in determining his choice of vocation by his father, but still more by his maternal ancestors. His mother was Dorothea Elizabeth de Watteville, daughter of Baron (afterwards Bishop) John de Watteville and Benija, who was a daughter of Count Zinzendorf. Nicholas Lewis Count Zinzendorf (born in Dresden in 1700) was celebrated in his early youth for forming religious Societies.

*This sketch is based on "A Memoir of the late Lewis David von Schweinitz, P. D., with a sketch of his scientific labors, read before the Academy of Natural Sciences of Philadelphia, May 12th, 1835, by R. Walter Johnson," to which the reader is referred for a more extended account. A MSS. copy of this was placed in my hands by the kindness of Mr. Eugene A. Rau. The latter also furnished a photograph of the lithographic likeness accompanying the memoir, from which our portrait was prepared.